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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,440	10/25/2004	Akinobu Kakimoto	260742US3PCT	2401

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EXAMINER	
STOUFFER, KELLY M	

ART UNIT	PAPER NUMBER
1762	

NOTIFICATION DATE	DELIVERY MODE
08/20/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/511,440	KAKIMOTO ET AL.	
	Examiner	Art Unit	
	Kelly Stouffer	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The examiner notes the cancellation of claims 1-6 in the response filed 20 June 2007.

2. Applicant's arguments filed 20 June 2007 have been fully considered but they are not persuasive. The applicant argues that Park et al. does not teach the distance between the substrate and the gas jetting surface and the gas jetting velocity as result effective variables. The applicant further argues that evidence for the criticality of claimed values is present in sections of the specification and the figures. However, Park et al. includes changing the position of the substrate relative to the heater in paragraph 0041 and in Figure 3. One would recognize that when looking at the apparatus labeled in Figure 1, by changing the height relative to the heater Park et al. is also changing the height relative to the showerhead and hence the area as described in claim 7. This change of distance occurs in Park et al. to affect the substrate temperature (paragraphs 0041 and 0047) that determine crystallinity in the film and leakage current (paragraphs 0004-0008). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Park et al. to include distances between the substrate and the heater, and consequently, the substrate and the showerhead within the ranges of those claims by routine experimentation in order to achieve an optimal amount of crystallization and leakage current.

Park et al. additionally includes changing the chamber pressure in paragraph 0041 for the same reasons. One of ordinary skill in the art would realize that chamber pressure is directly affected by gas flow from a showerhead, and therefore it is obvious that this variable be modified by routine experimentation as well.

As for the specification and Figures 4-9 containing evidence of criticality of the claimed values, the examiner notes that evidence of criticality can only be shown when the evidence is commensurate in scope with the claims. The specification and drawings provide support for criticality of these values for only particular precursors, etc. and not all gaseous precursors and claimed in the independent claims.

For at least these reasons, the rejections of the previous office action are maintained. New grounds of rejection are present below necessitated by the amendment filed 20 June 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 7-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent publication 2002/0034857 A1 to Park et al.

As to claims 7-9 and 12-14, Park et al. discloses a processing method for processing an object to be processed by using a processing apparatus including a processing chamber; a shower head structure; installed at a ceiling portion of the processing chamber, having a plurality of gas jetting holes formed on a gas

jetting surface thereof to inject a processing gas into the processing chamber, the gas jetting surface facing toward an inside of the processing chamber, and a mounting table installed in the processing chamber to face toward the shower head structure. (Figure 1, paragraphs 0028 and 0030)) Park et al. additionally discloses restricting the distance between the showerhead and mounting table (Figure 1), loading the object on the mounting table (which one of ordinary skill in the art would recognize was implied to have happened as the wafer is on the mounting table in Figure 1 and throughout the document), and introducing the processing gas through the gas jetting holes into the processing chamber, the processing gas being ozone to reform or anneal a tantalum oxide film (paragraph 0006). Park et al. does not include using the claimed gas velocities or showerhead distances with the claimed relationship. However, Park et al. does include that showerhead distance (one would recognize that when looking at the apparatus labeled in Figure 1, by changing the height relative to the heater Park et al. is also changing the height relative to the showerhead and hence the area as described in the claims) and chamber pressures (which would include gas velocities that are directly related to chamber pressures) affect substrate temperatures (Figure 3, paragraphs 0041 and 0047) that determine the crystallinity of the final tantalum oxide film and leakage current of the film after annealing with ozone (paragraphs 0004-0008). The variables of distance between the substrate and showerhead, and gas velocities, are therefore result-effective and are not inventive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Park et al. to include distances between the substrate and showerhead and gas velocities in the ranges claimed by routine experimentation in order to receive an optimal amount of crystallization and leakage current in the resultant film, absent evidence showing a criticality of these variables commensurate in scope with the claims.

As to claims 10-11 and 15-16, Park et al. maintains a pressure and a temperature at a constant level while the precursors are being injected on page 4 et seq.

As to claims 17-19, the wafer stage and showerhead are circular as shown in Figures 6A and 6B and also in paragraphs 0028-0030. As to the size of the showerhead relative to the wafer, one of ordinary skill in the art would recognize that the relative size of each is only dependant upon coating the entire wafer, as is the purpose of Park et al. Therefore, relative size is a result-effective variable and its modification is not inventive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1762

kms

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER